

**REMARKS**

The Applicants thank the Examiner for the thorough consideration given the present application. Claims 1-22 are cancelled herein without prejudice to or disclaimer of the subject matter set forth therein. Claims 23-28 are added. Claims 23-25 and 27 are independent. The Examiner is respectfully requested to reconsider the rejections in view of the amendments and remarks set forth herein.

**Drawings**

It is gratefully appreciated that the Examiner has accepted the drawings.

**Claim for Priority**

It is gratefully appreciated that the Examiner has acknowledged the Applicants' claim for foreign priority.

**Information Disclosure Citation**

The Applicants thank the Examiner for considering the reference supplied with the Information Disclosure Statement filed April 13, 2006, and for providing the Applicants with an initialed copy of the PTO form filed therewith.

**Rejections Under 35 U.S.C. §103(a)**

Claim 1, 2, 5, 9, 10, 16, and 22 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Watanabe et al. (U.S. 6,449,400) in view of Chang (U.S. 2003/0133654); and

Claims 3, 4, 6, 12, 13 18, and 19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Watanabe et al. (U.S. 6,449,400) and Chang (U.S. 2003/0133654), and further in view of Watanabe (JP 2002-350335);

Claims 8, 11, and 17 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Watanabe et al. (U.S. 6,449,400) and Chang (U.S. 2003/0133654), and further in view of Murphy (U.S. 5,381,229)\*\*; and

Claims 4, 7, 14, 15, 20, and 21 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Watanabe et al. (U.S. 6,449,400) and Chang (U.S. 2003/0133654), and further in view of Peterson et al. (U.S. 4,894,532)\*\*\*.

These rejections are respectfully traversed.

***\*\*Note that on page 7, line 2 of the Office Action the Examiner appears to have incorrectly cited (U.S. 4,894,532).***

***\*\*\*Note that on page 7, line 16 of the Office Action the Examiner appears to have incorrectly cited (U.S. 5,381,229).***

***Further, note that under FIGS. 1 and 5 on page 4 of the Office Action, it appears that the Examiner intended to cite Watanabe et al. rather than Swift et al.***

#### **Independent Claims 23 and 25**

While not conceding the appropriateness of the Examiner's rejection, but merely to advance prosecution of the instant application, each of independent claims 23 and 25 has been added to recite a combination of elements, including *inter alia*

a metal film provided at a surface side of said hetero core and generating surface plasmon by reflection of light in the hetero core at that surface; and

reflection means for reflecting light in the hetero core and returning the light to said optical fiber portion side at the surface of the end of the hetero core opposite to the end melt bonded to the optical fiber portion.

On page 6 of the Office Action, the Examiner asserts that Watanabe JP 2002-350335 discloses a metal film 17 surrounding hetero core 14. Then on page 7 of the Office Action, the Examiner asserts that Murphy et al. (U.S. 5,381,229) discloses a reflecting film at the end face of the sapphire fiber 14 or a hetero core (col. 5. lines 31-34, and FIG. 2), thus alleged ly making up for the deficiency of Watanabe JP 2002-350335.

The Applicants respectfully disagree.

A careful review of Murphy et al. shows that Murphy et al. merely discloses an optional reflection film 22 on and end of a fiber 14 that does not have a hetero core, and does not have a metal film surrounding it.

In summary, Watanabe JP 2002-350335 merely discloses a hetero core with a metal film but without a reflection means. Murphy et al. merely discloses an optional reflection film 22 on and end of a fiber 14 but without either a hetero core or a metal film.

Therefore, one skilled in the art when the present invention was made would have no motivation to combine Murphy et al. with Watanabe et al. to arrive at the present invention as set forth in claims 23 and 25, each of which recites “reflection means for reflecting light in a hetero core and returning the light to said optical fiber portion”.

The Examiner wrongly asserts that it would be obvious to combine the Murphy et al. optional reflection film 22 on a fiber 14 without a hetero core, and combine it with the teachings of Watanabe et al., which teaches a completely different fiber structure, namely a fiber with a hetero core.

The Applicants respectfully submit that the Examiner has randomly combined selected elements of two very different references, has failed to consider each of Watanabe et al. and Murphy et al. as a whole, has failed to demonstrate a motivation to combine Watanabe et al. and Murphy et al., and therefore has failed to establish a *prima facie* of obviousness.

At least for the reasons explained above, the Applicants respectfully submit that the combination of elements as set forth in each of independent claims 23 and 25 is not disclosed or made obvious by the prior art of record.

Accordingly, claims 23 and 25 are in condition for allowance.

**Independent Claims 24 and 27**

In addition, each of independent claims 24 and 27 has been added to recite a combination of elements, including

a detection chemical immobilizing film selectively reacting with a detection object at the outside of said hetero core and giving a change in accordance with that reaction to the light in the hetero core formed at a surface side of said hetero core; and

reflection means for reflecting light in the hetero core and returning the light to said optical fiber portion side at the surface of the end of the hetero core opposite to the end melt bonded to the optical fiber portion.

On page 7 of the Office Action, the Examiner asserts that the combination of Watanabe (U.S. 6,449,400) and Chang (U.S. 2003/0113654) discloses a hetero core 14. The Examiner further asserts that Murphy et al. (U.S. 5,381,229) discloses a reflecting film at the end face of the sapphire fiber 14 or a hetero core (col. 5. lines 31-34, and FIG. 2).

While the Examiner concedes that none of Watanabe (U.S. 6,449,400) and Chang (U.S. 2003/0113654) discloses a detection chemical immobilizing film, he then asserts on page 8 of the Office Action that Peterson et al. (U.S. 4,894, 532) make up for the deficiencies of Watanabe (U.S. 6,449,400), Chang (U.S. 2003/0113654), and Murphy et al. (U.S. 5,381,229). In particular the Examiner asserts that Peterson et al. col 4, lines 20-23 discloses "a coating of thin film 16 ...to the sensor rod 11 ..."

The Applicants respectfully disagree.

The combination of Watanabe (U.S. 6,449,400) and Chang (U.S. 2003/0113654) appear to disclose a hetero core.

However, a careful review of Murphy et al. shows that Murphy et al. merely discloses an optional reflection film 22 on and end of a fiber 14 without a hetero core.

In addition, a careful review of Peterson et al. shows that Peterson et al. column 4, lines 20-23 merely discloses monochromator 16 at one end of a coated quartz rod 11. A

monochromator 16 has no relation to a fiber film as asserted by the Examiner, and there is no indication that the quartz rod 11 of Peterson et al. includes a hetero core.

Therefore, one skilled in the art when the present invention was made would have no motivation to combine either of Murphy et al. or Peterson et al. with Watanabe et al. and Chang to arrive at the present invention as set forth in claims 24 and 24, each of which recites

“a detection chemical immobilizing film selectively reacting with a detection object at the outside of said hetero core...” and

“reflection means for reflecting light in a hetero core and returning the light to said optical fiber portion”.

The Examiner wrongly asserts that it would be obvious to combine either Murphy et al.’s optional reflection film 22 on a fiber 14 without a hetero core, or Peterson et al.’s quartz rod 11 without a hetero core, with primary references Watanabe (U.S. 6,449,400) and Chang (U.S. 2003/0113654), to arrive at the present invention as set forth in claims 24 and 27.

The Applicants respectfully submit that the Examiner has randomly combined selected elements of four very different references, has failed to consider each of Watanabe et al., Chang Murphy et al., and Peterson et al. as a whole, has failed to demonstrate a motivation to combine Watanabe et al., Chang, Murphy et al., and Peterson et al., and therefore has failed to establish a *prima facie* of obviousness with regard to the present invention as set forth in claims 24 and 27.

At least for the reasons explained above, the Applicants respectfully submit that the combination of elements as set forth in each of independent claims 24 and 27 is not disclosed or made obvious by the prior art of record.

Accordingly, independent claims 24 and 27 are in condition for allowance.

**Dependent Claims**

The Examiner will note that dependent claims 25 and 28 have been added.

All dependent claims are in condition for allowance due to their dependency from allowable independent claims, or due to the additional novel features set forth therein.

Accordingly, reconsideration and withdrawal of the rejections under 35 U.S.C. §103(a) are respectfully requested.

**CONCLUSION**

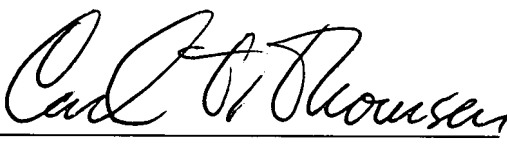
All of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. It is believed that a full and complete response has been made to the outstanding Office Action, and that the present application is in condition for allowance.

If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, he is invited to telephone Carl T. Thomsen (Reg. No. 50,786) at (703) 208-4030(direct line).

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§1.16 or 1.17, particularly extension of time fees.

Respectfully submitted,  
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